

CLAIMS:

1. A light emitting device comprising a light emitting structure capable of emitting primary light of a wavelength less than 480 nm and a luminescent screen comprising a phosphor of general formula $(\text{Sr}_{1-a-b}\text{Ca}_b\text{Ba}_c\text{Mg}_d\text{Zn}_e)\text{Si}_x\text{N}_y\text{O}_z:\text{Eu}_a$, wherein $0.002 \leq a \leq 0.2$, $0.0 \leq b \leq 0.25$, $0.0 \leq c \leq 0.25$, $0.0 \leq d \leq 0.25$, $0.0 \leq e \leq 0.25$, $1.5 \leq x \leq 2.5$, $1.5 \leq y \leq 2.5$ and $1.5 < z < 2.5$.
2. The light emitting device according to claim 1, wherein the light emitting structure capable of emitting primary light of a wavelength from 450 nm to 480 nm.
3. The light-emitting device according to claim 1, wherein the light emitting structure is a blue-emitting LED.
4. The light-emitting device according to claim 1, wherein the phosphor is comprised in a thin film layer.
5. The light emitting device according to claim 1, wherein the luminescent screen comprises a green phosphor of general formula $(\text{Sr}_{1-a-b}\text{Ca}_b\text{Ba}_c\text{Mg}_d\text{Zn}_e)\text{Si}_x\text{N}_y\text{O}_z:\text{Eu}_a$, wherein $0.002 \leq a \leq 0.2$, $0.0 \leq b \leq 0.25$, $0.0 \leq c \leq 0.25$, $0.0 \leq d \leq 0.25$, $0.0 \leq e \leq 0.25$, $1.5 \leq x \leq 2.5$, $1.5 \leq y \leq 2.5$ and $1.5 < z < 2.5$ and a red phosphor.

6. The light emitting device according to claim 5, wherein the red phosphor is selected from the group of $(\text{Sr}_{1-x-y}\text{Ba}_x\text{Ca}_y)\text{S}:\text{Eu}$ wherein $0 \leq x < 1$ and $0 \leq y < 1$; $\text{CaS}:\text{Ce}, \text{Cl}$; $\text{Li}_2\text{Sr SiO}_4:\text{Eu}$; $(\text{Sr}_{1-x}\text{Ca}_x)\text{SiO}_4:\text{Eu}$ wherein $0 \leq x < 1$; $(\text{Y}_{1-x}\text{Gd}_x)_3(\text{Al}_{1-y}\text{Ga}_y)_5\text{O}_{12}:\text{Ce}$ wherein $0 \leq x < 1$ and $0 \leq y < 1$ and $(\text{Sr}_{1-x-y}\text{Ba}_x\text{Ca}_y)_2\text{Si}_5\text{N}_8:\text{Eu}$ wherein $0 \leq x < 1$ and $0 \leq y < 1$.

7. The light-emitting device according to claim 1, wherein the device is a lamp.

8. A luminescent screen comprising a phosphor of general formula $(\text{Sr}_{1-a-b}\text{Ca}_b\text{Ba}_c\text{Mg}_d\text{Zn}_e)\text{Si}_x\text{N}_y\text{O}_z:\text{Eu}_a$, wherein $0.002 \leq a \leq 0.2$, $0.0 \leq b \leq 0.25$, $0.0 \leq c \leq 0.25$, $0.0 \leq d \leq 0.25$, $0.0 \leq e \leq 0.25$, $1.5 \leq x \leq 2.5$, $1.5 \leq y \leq 2.5$ and $1.5 < z < 2.5$.

9. A phosphor of general formula $(\text{Sr}_{1-a-b}\text{Ca}_b\text{Ba}_c\text{Mg}_d\text{Zn}_e)\text{Si}_x\text{N}_y\text{O}_z:\text{Eu}_a$, wherein $0.002 \leq a \leq 0.2$, $0.0 \leq b \leq 0.25$, $0.0 \leq c \leq 0.25$, $0.0 \leq d \leq 0.25$, $0.0 \leq e \leq 0.25$, $1.5 \leq x \leq 2.5$, $1.5 \leq y \leq 2.5$ and $1.5 < z < 2.5$.

10. A phosphor according to claim 9, wherein $1.9 \leq x \leq 2.1$, $1.9 \leq y \leq 2.1$ and $1.9 < z < 2.1$.

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11. A phosphor according to claim 9, of general formula $\text{Sr}_{1-a}\text{Si}_2\text{N}_2\text{O}_2:\text{Eu}_a$